

Office Address: 11 South Main Street Marlboro, NJ 07746 Tel: (732) 577-0180

March 31, 2022

Planning Board Township of North Brunswick 710 Hermann Road North Brunswick, NJ 08902

RE: Stormwater Report

Preliminary & Final Major Site Plan

2720 U.S. Highway 130

Block 224, Lot 1

Township of North Brunswick, Middlesex County, New Jersey

Dear Board Members:

The above referenced application consists of a 0.707 acre property located at the northeast corner of the intersection of U.S. Highway 130 and Davidsons Mill Road. The zoning is C-4 (Non-Restricted Commercial District) Zone. Presently, the property is occupied by a service station.

The high point elevation of the lot is located at the front left corner of the property adjacent to the existing egress driveway at Route 130 (elevation 95). From the high point, runoff from the service station flows in a southwest direction towards Davidsons Mill Road (elevation 92). A system of catch basins and pipes intercept the runoff prior to it reaching Davidsons Mill Road.

Once the water is in the storm sewer system, it flows west through a 15" ADS pipe, into the existing storm sewer system located at the corner of the site. From the corner, the stormwater is conveyed via 18" RCP pipe into an existing 60" diameter pipe.

According to the Middlesex County Soil Survey, the existing soil type on the site is Nixon moderately well drained variant loam, 2 to 5 percent slopes. The hydrologic soil group associated with the Nixon Series is Type 'B'.

The total existing lot coverage on the site is 21,380 S.F. which represents 69.5% lot coverage. By performing runoff computations for the existing condition, utilizing the NOAA 'D' distribution, the peak rate of runoff generated in the 2, 10, and 100-year storms can be summarized as follows:

TABLE 1

Storm	Peak Rate of Runoff (Existing)
2-year	1.14 cfs
10-year	1.89 cfs
100-year	3.49 cfs

The redevelopment of the property will result in an increase of impervious surfaces of 790 square feet. Total lot coverage proposed is 22,170 S.F. (72.0% lot coverage). By re-computing the peak rate of runoff in the proposed condition, the results for the 2, 10, and 100-year storms are as follows:

TABLE 2

Storm	Peak Rate of Runoff (Proposed)
2-year	1.18 cfs
10-year	1.94 cfs
100-year	3.54 cfs

A comparison of the existing and proposed peak rates of runoff is as follows:

TABLE 3

Storm	Difference (Pre vs Post)
2-year	0.04 cfs
10-year	0.05 cfs
100-year	0.05 cfs

N.J.A.C. 7:8 provides for standards for which stormwater management measures are required as related to a development. The project is not classified as a Major Development as less than 1 acre of land disturbance is proposed and less than ½ acre of new impervious surfaces are proposed.

The above peak rate of runoff increases in Table 3 can be considered *de minimus* and do not require further structural stormwater management measures. The existing storm sewer will continue to accommodate the site with regard to drainage and no additional infrastructure is required.

Should you have any questions, or require additional information, please do not hesitate to contact me at the number above.

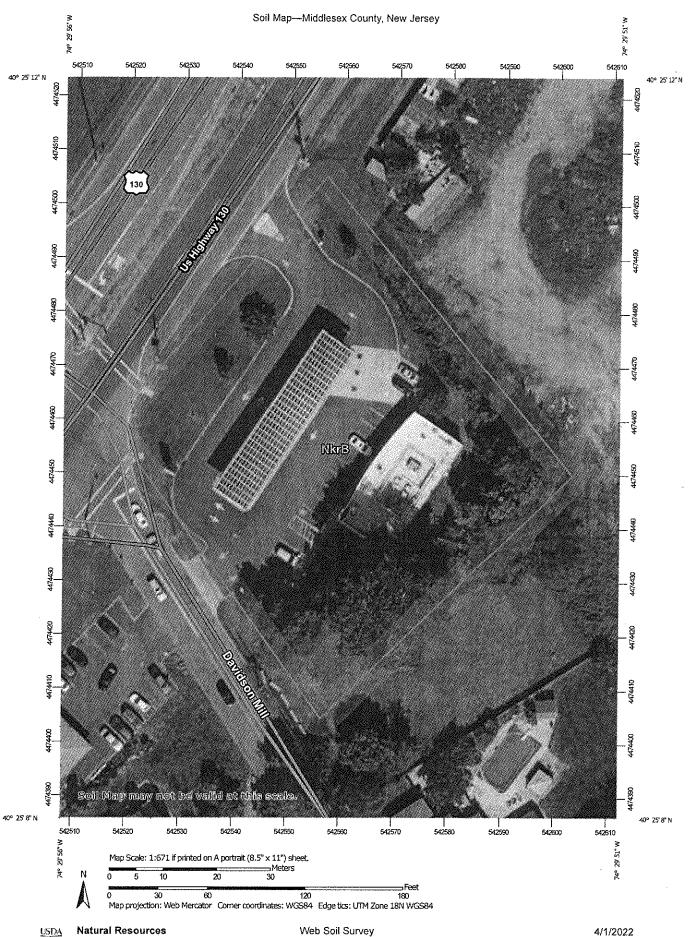
Very truly yours,

EAST POINT ENGINEERING, LLC

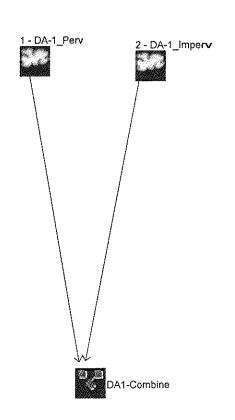
Marc S. Leber

Marc S. Leber, P.E., P.P., C.M.E.

cc: Nirav Mehta, Applicant



Watershed Model Schematic



<u>Legend</u>

Hyd.OriginDescription1SCS RunoffDA-1_Perv2SCS RunoffDA-1_Imperv3CombineDA1-Combine

Project: existing 03-31-22.gpw

Friday, Apr 1, 2022

Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisoive v9.23

Hyd.	Hydrograph	Inflow				Peak Out	Peak Outflow (cfs)									
Vo.	type (origin)	Hyd(s)	1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	description					
1	SCS Runoff			0.057			0.229	*******		0,673	DA-1_Perv					
2	SCS Runoff	************		1.081			1.663			2.813	DA-1_Imperv					
3	Combine	1, 2	er er skund er se	1.138	********	***********	1.892	Vertical artifat	*******	3.486	DA1-Combine					
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Proj. file: existing 03-31-22.gpw

Friday, Apr 1, 2022

Hydrograph Summary Report

lyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.057	6	732	371				DA-1_Perv
2	SCS Runoff	1.081	6	732	5,198				DA-1_Imperv
2 3	SCS Runoff Combine	1.138	6 6	732	5,568	1, 2			DA1-Combine DA1-Combine
,	ting 03-31-22	÷	-'			Period: 2 Ye		Friday, Apr	1.0000

Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 2 yrs
Time interval = 6 min
Drainage area = 0.215 ac
Basin Slope = 0.0 %
Tc method = USER

Total precip.
Storm duration

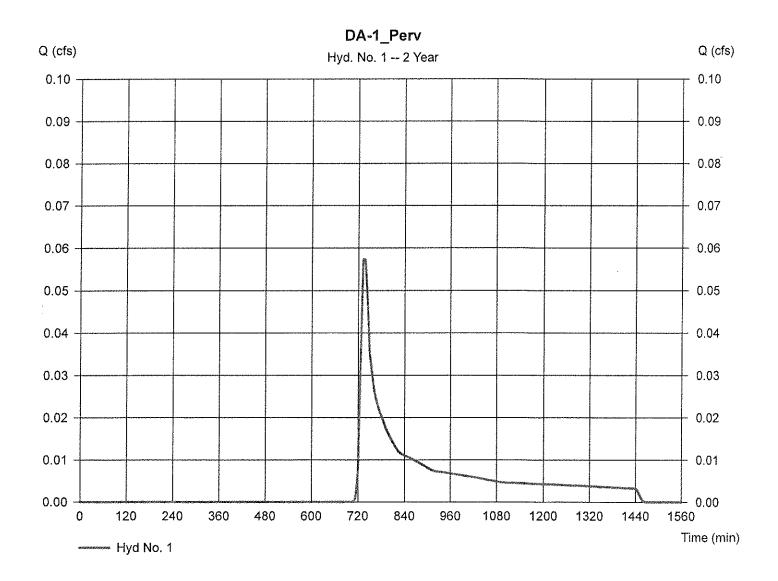
= 3.35 in

= NOAA_D cds.CDS

Peak discharge = 0.057 cfs
Time to peak = 732 min
Hyd. volume = 371 cuft
Curve number = 61
Hydraulic length = 0 ft

Hydraulic length = 0 ft
Time of conc. (Tc) = 10.00 min
Distribution = Custom

Shape factor = 484



Hydraflow Hydrographs by Intelisoive v9.23

Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

= SCS Runoff Hydrograph type Storm frequency = 2 yrsTime interval = 6 min= 0.490 acDrainage area Basin Slope = 0.0 %= USER Tc method

Total precip. Storm duration

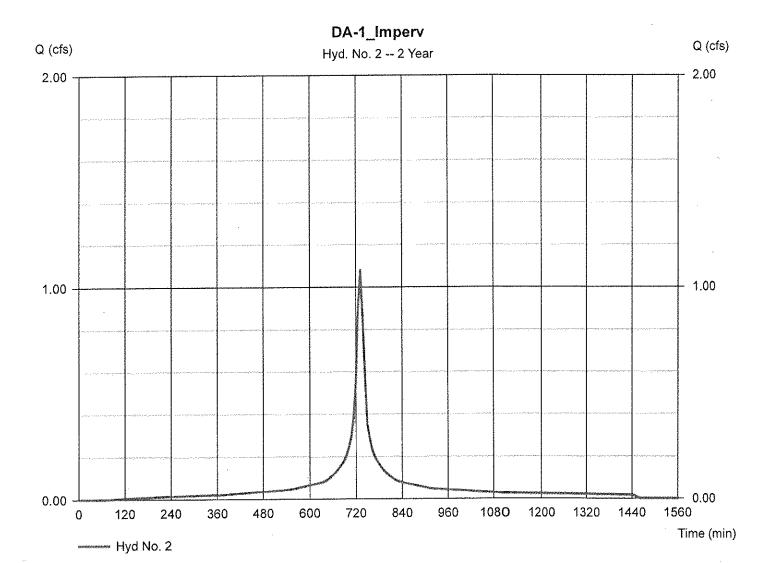
= NOAA D cds.CDS

= 3.35 in

Peak discharge = 1.081 cfsTime to peak = 732 min Hyd. volume = 5,198 cuft

Curve number = 98 Hydraulic length = 0 ft

Time of conc. (Tc) $= 10.00 \, \text{min}$ Distribution = Custom Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 3

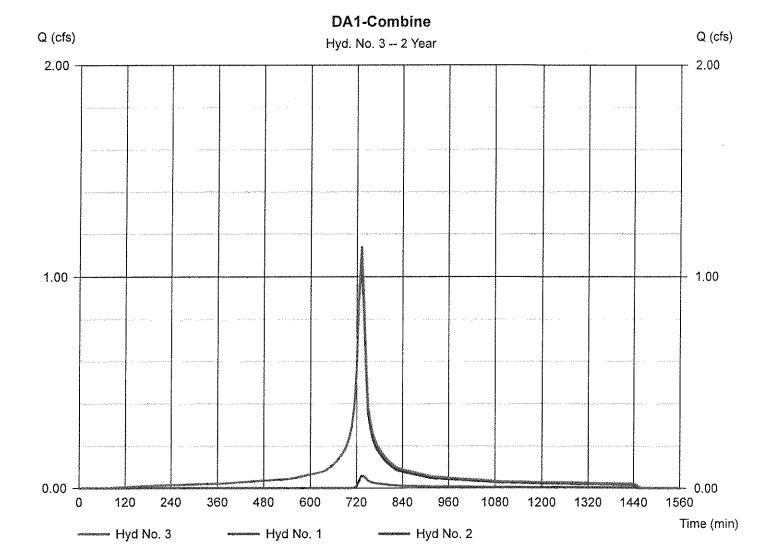
DA1-Combine

Inflow hyds.

Hydrograph type = Combine Storm frequency = 2 yrs Time interval = 6 min

= 1, 2

Peak discharge = 1.138 cfs Time to peak = 732 min Hyd. volume = 5,568 cuft Contrib. drain. area = 0.705 ac



Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.229	6	732	1,055		and the second second	with a derivative designation of	DA-1_Perv
2	SCS Runoff	1.663	6	732	8,143				DA-1_Imperv
3	Combine	1.892	6	732	9,197	1, 2			DA1-Combine
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•									
						and a second a second and a second a second and a second			
exi	sting 03-31-2	2.gpw			Return	Period: 10	Year	Friday, Ap	r 1, 2022

Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Time interval = 6 min
Drainage area = 0.215 ac
Basin Slope = 0.0 %
Tc method = USER

Total precip.
Storm duration

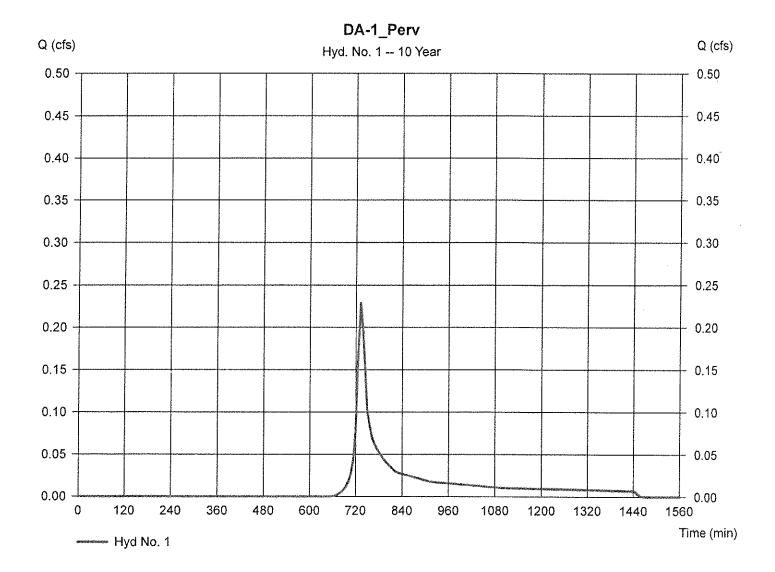
= 5.12 in = NOAA D cds.CDS Peak discharge Time to peak Hyd. volume

= 0.229 cfs = 732 min = 1,055 cuft

Curve number = 61
Hydraulic length = 0 ft

Time of conc. (Tc) = 10.00 min Distribution = Custom

Shape factor = 484



Hydraflow Hydrographs by Intelisoive v9.23

Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff = 10 yrsStorm frequency = 6 minTime interval = 0.490 acDrainage area Basin Slope = 0.0 % = USER Tc method

Total precip.

Storm duration

= NOAA_D cds.CDS

= 5.12 in

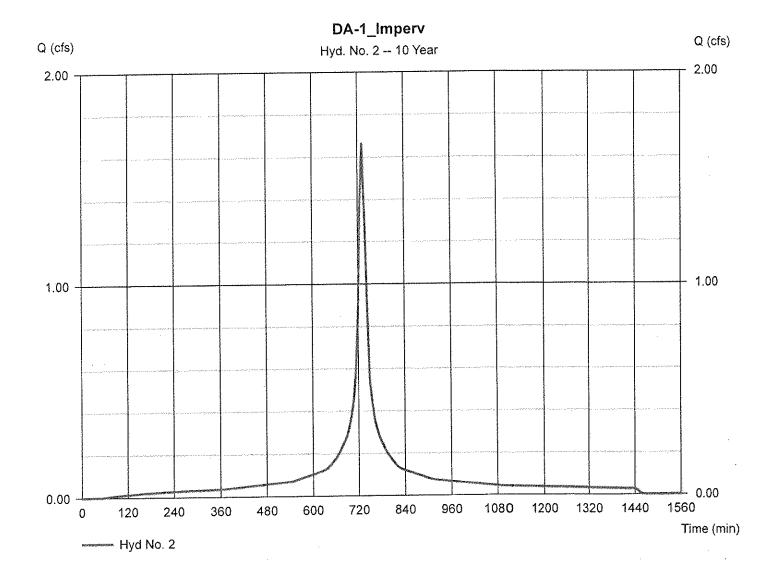
Peak discharge = 1.663 cfs= 732 min Time to peak

Hyd. volume = 8,143 cuft

Curve number = 98 Hydraulic length = 0 ft

Time of conc. (Tc) $= 10.00 \, \text{min}$ Distribution = Custom

Shape factor = 484



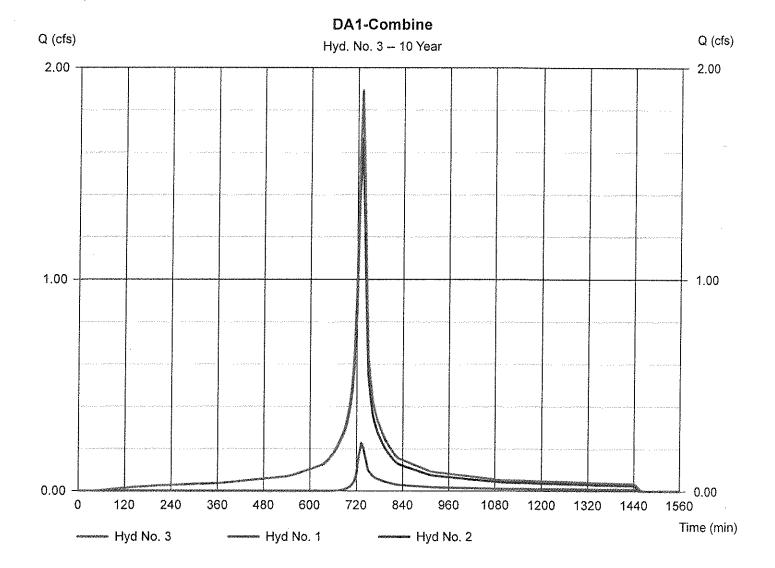
Hydraflow Hydrographs by Intelisoive v9.23

Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine Storm frequency = 10 yrs Time interval = 6 min Inflow hyds. = 1, 2 Peak discharge = 1.892 cfs
Time to peak = 732 min
Hyd. volume = 9,197 cuft
Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

1 SCS Runoff 0.673 6 732 2.877 DA-1_Perv 2.813 6 732 13,990 DA-1_Imperv DA-1_I	Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
3 Combine 3.486 6 732 16,867 1,2 DA1-Combine	1	SCS Runoff	0.673	6	732	2,877		20 At An about 10		DA-1_Perv
	2	SCS Runoff	2,813	6	732	13,990	****			DA-1_Imperv
	3	Combine	3.486	. 6	732	16,867	1, 2	and decimals as		DA1-Combine
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							W married married and the control of			
							over the second			·
existing 03-31-22.gpw Return Period: 100 Year Friday, Apr 1, 2022										

Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

= SCS Runoff Hydrograph type Storm frequency = 100 yrsTime interval = 6 min= 0.215 acDrainage area Basin Slope = 0.0 %Tc method

Total precip.

= NOAA D cds.CDS

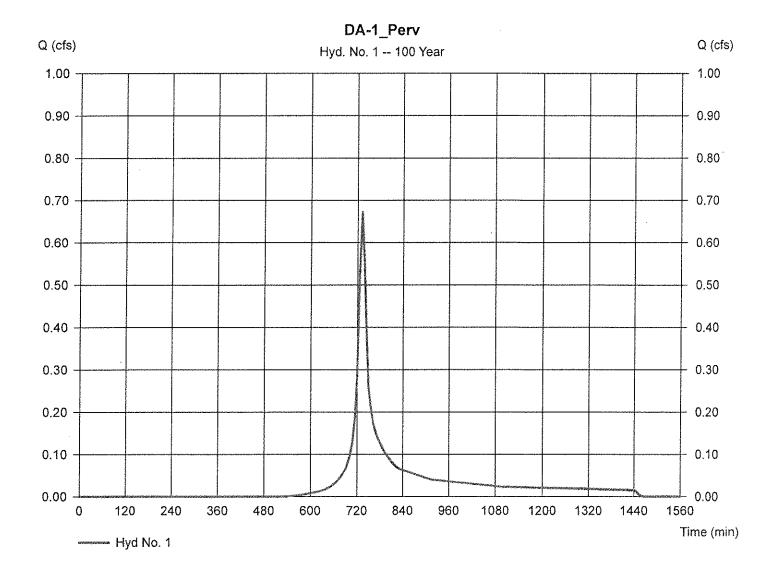
Storm duration

= USER = 8.63 in Peak discharge = 0.673 cfsTime to peak $= 732 \, \text{min}$ Hyd. volume = 2.877 cuft

Curve number = 61 Hydraulic length = 0 ft

Time of conc. (Tc) $= 10.00 \, \text{min}$ Distribution = Custom

Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

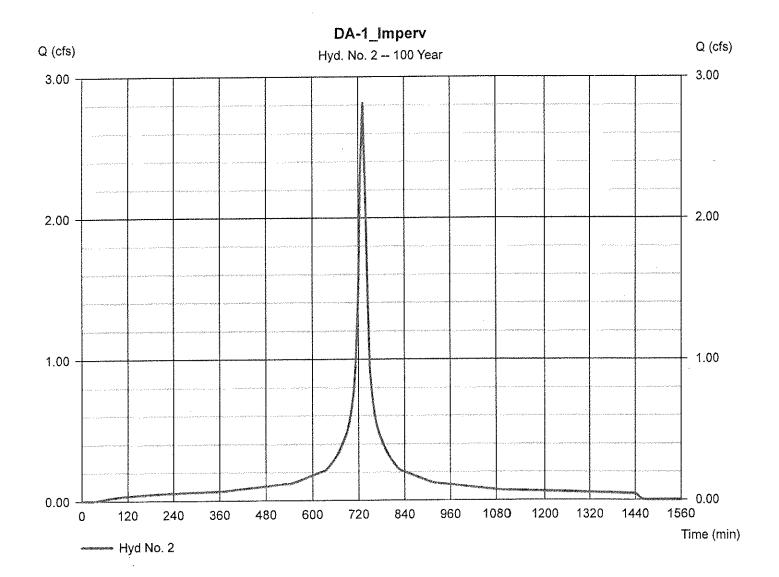
Hyd. No. 2

DA-1_Imperv

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 0.490 ac
Basin Slope = 0.0 %
Tc method = USER

Total precip. = 8.63 in Storm duration = NOAA_D cds.CDS Peak discharge = 2.813 cfs
Time to peak = 732 min
Hyd. volume = 13,990 cuft
Curve number = 98

Hydraulic length = 0 ft
Time of conc. (Tc) = 10.00 min
Distribution = Custom
Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Storm frequency =

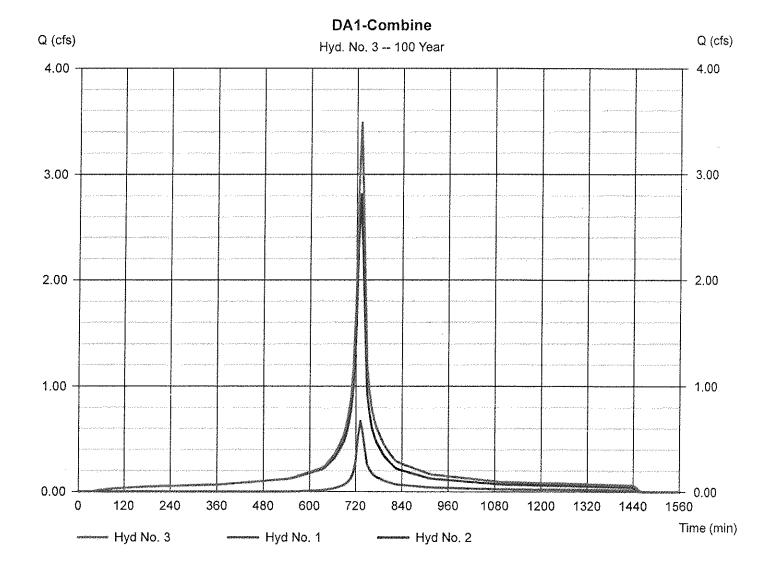
= Combine = 100 yrs = 6 min

Time interval Inflow hyds.

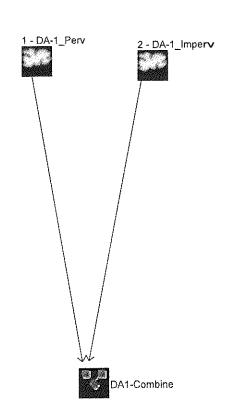
= 1, 2

Peak discharge = 3.486 cfs
Time to peak = 732 min
Hyd. volume = 16,867 cuft

Contrib. drain. area = 0.705 ac



Watershed Model Schematic



Legend

<u>Hyd.</u>	<u>Origin</u>	<u>Description</u>
1	SCS Runoff	DA-1_Perv
2	SCS Runoff	DA-1_Imperv
3	Combine	DA1-Combine

Project: proposed 03-31-22.gpw

Friday, Apr 1, 2022

Hydrograph Return Period Recap

lyd.	Hydrograph	Inflow				Hydrograph					
lo.	type (origin)	Hyd(s)	1-Yr	2-Yr	3-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr	description
i	SCS Runoff			0.052	merry be neverted the	-	0.207		***************************************	0.611	DA-1_Perv
2	SCS Runoff		******	1,125			1.731			2.928	DA-1_Imperv
3	Combine	1, 2	********	1.177	******		1.938		***************************************	3.538	DA1-Combine
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					der Assessment Control						
					***************************************	de de les constitucións en constitución en con					
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Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.052	6	732	336		4	- MARINA	DA-1_Perv
2	SCS Runoff	1.125	6	732	5,410		*******	******	DA-1_Imperv
3	Combine	1.177	6	732	5,746	1, 2	do ad la monda del	A-100 AA 444-444	DA1-Combine
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		Additional and the second seco							
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							romana roma andre		
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		Managara de la calenda de la c							
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	oosed 03-31-7	22 apu			Return F	Period: 2 Ye	ar	Friday, Apr	1 2022

Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1 Perv

Hydrograph type = SCS Runoff Storm frequency = 2 yrsTime interval = 6 min = 0.195 acDrainage area Basin Slope = 0.0 % Tc method = USER

Total precip.

Storm duration

= 3.35 in

= NOAA D cds.CDS

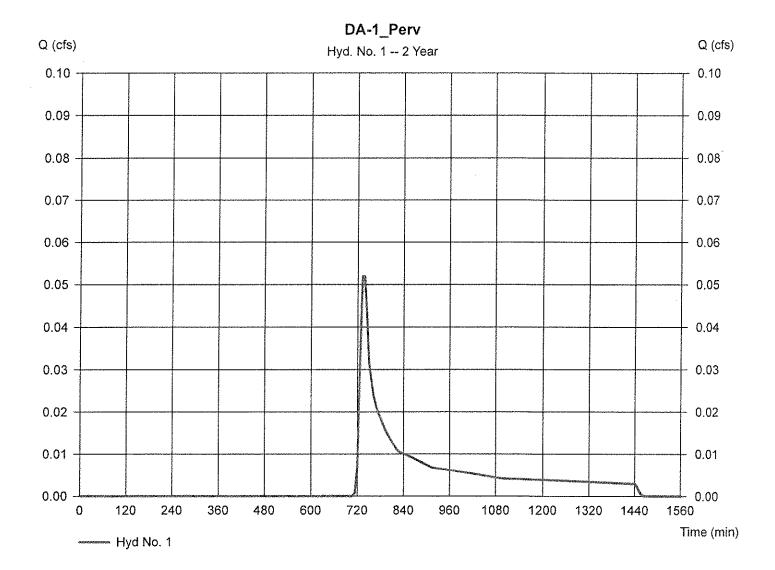
Peak discharge = 0.052 cfsTime to peak

= 732 min = 336 cuft

Hyd. volume Curve number = 61

= 0 ftHydraulic length Time of conc. (Tc) $= 10.00 \, \text{min}$

Distribution = Custom Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 2

DA-1_Imperv

= SCS Runoff Hydrograph type Storm frequency = 2 yrsTime interval = 6 min = 0.510 acDrainage area Basin Šlope = 0.0 %= USER Tc method

Storm duration

Total precip.

= 3.35 in

= NOAA D cds.CDS

Peak discharge Time to peak

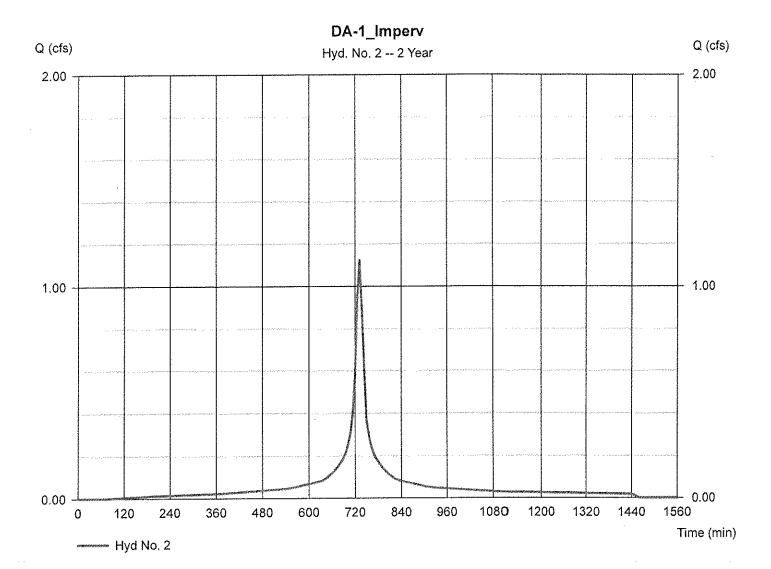
= 1.125 cfs

= 732 min Hyd. volume = 5,410 cuft

Curve number = 98 Hydraulic length = 0 ft

Time of conc. (Tc) $= 10.00 \, \text{min}$ Distribution = Custom

Shape factor = 484



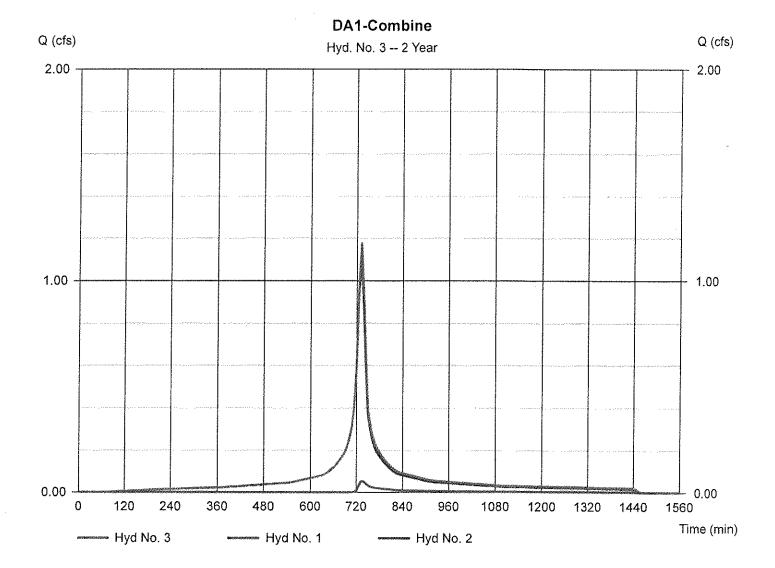
Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine Storm frequency = 2 yrs Time interval = 6 min Inflow hyds. = 1, 2 Peak discharge = 1.177 cfs Time to peak = 732 min Hyd. volume = 5,746 cuft Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

iyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.207	6	732	957		Bit Line Mark	NOW OF THE PARTY.	DA-1_Perv
2	SCS Runoff	1.731	6	732	8,475	****		A1 00 PM PATHON 2014	DA-1_Imperv
3	Combine	1,938	6	732	9,432	1, 2	W La Miller Val	A de la Maria	DA1-Combine
			ar de Address es es de Caracter d'Anguerre conservers es en conservers es en conservers es en conservers es en						
			Address and the control of the contr						
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oroi	oosed 03-31-2	22.gpw			Return F	eriod: 10 Y	ear	Friday, Apr	1, 2022

Hydraflow Hydrographs by Intelisoive v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Time interval = 6 min
Drainage area = 0.195 ac
Basin Slope = 0.0 %
Tc method = USER

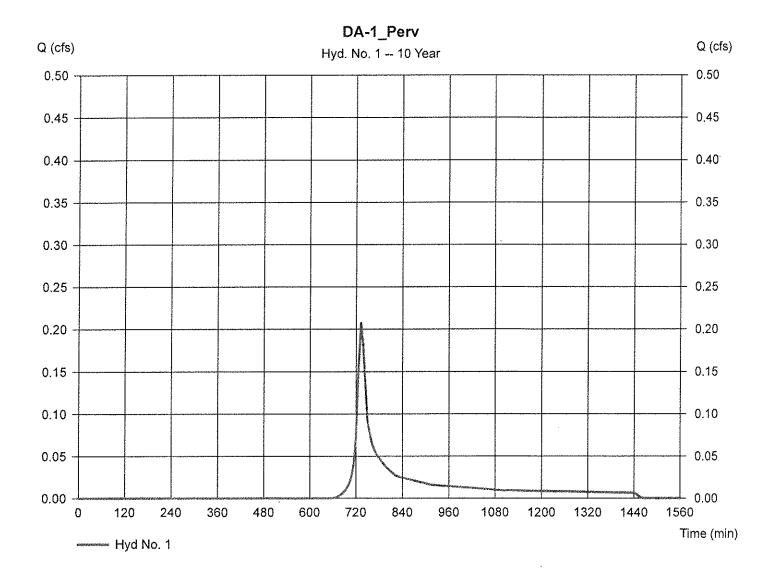
Total precip.
Storm duration

= 5.12 in = NOAA D cds.CDS Peak discharge = 0.207 cfs
Time to peak = 732 min
Hyd. volume = 957 cuft
Curve number = 61

Hydraulic length = 0 ft

Time of conc. (Tc) = 10.00 min
Distribution = Custom

Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 2

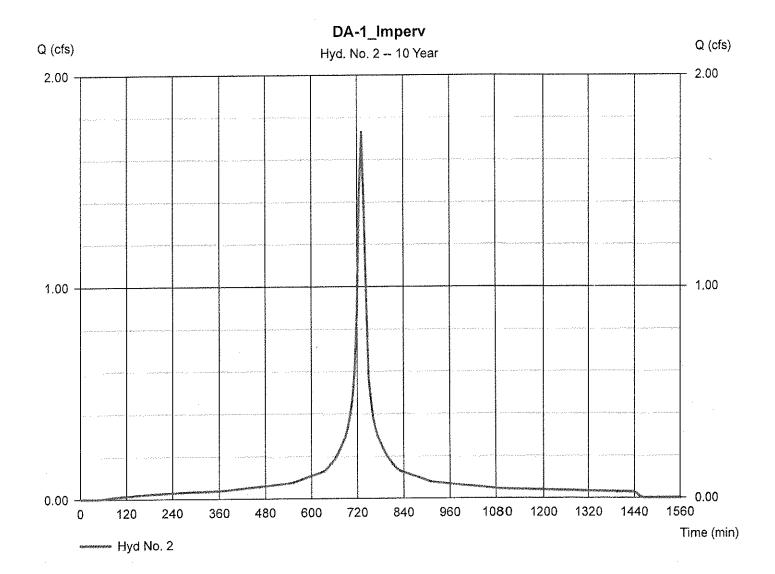
DA-1_Imperv

Hydrograph type = SCS Runoff
Storm frequency = 10 yrs
Time interval = 6 min
Drainage area = 0.510 ac
Basin Slope = 0.0 %
Tc method = USER

Total precip. Storm duration = 5.12 in = NOAA_D cds.CDS Peak discharge = 1.731 cfs Time to peak = 732 min Hyd. volume = 8,475 cuft Curve number = 98

Curve number = 98 Hydraulic length = 0 ft Time of conc. (Tc) = 10.00 min

Distribution = Custom Shape factor = 484



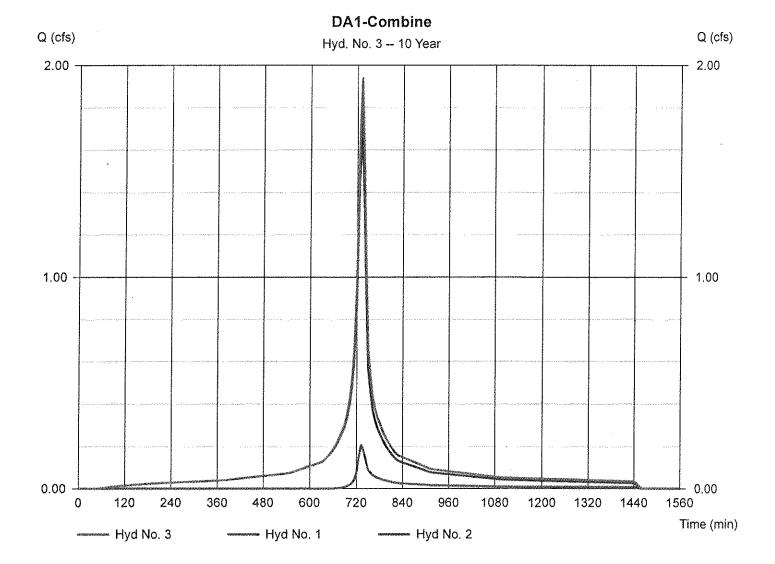
Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type = Combine Storm frequency = 10 yrs Time interval = 6 min Inflow hyds. = 1, 2 Peak discharge = 1.938 cfs
Time to peak = 732 min
Hyd. volume = 9,432 cuft
Contrib. drain. area = 0.705 ac



Hydrograph Summary Report

lyd.	Hydrograph	Peak	Time	Time to	Hyd.	Inflow	Maximum	Total	Hydrograph
0.	type (origin)	flow (cfs)	interval (min)	peak (min)	volume (cuft)	hyd(s)	elevation (ft)	strge used (cuft)	description
	SCS Runoff	0.611	6	732	2,609) 	had not very date description.	DA-1_Perv
!	SCS Runoff	2.928	6	732	14,561		20 NO NO NO NO NO		DA-1_Imperv
2	SCS Runoff Combine	2.928	6	732	14,561	1, 2			DA-1_Imperv DA1-Combine
	oosed 03-31-2)	L		Dotum F	Period: 100	\	Friday, Apr	4.0000

Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 1

DA-1_Perv

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 0.195 ac
Basin Slope = 0.0 %
Tc method = USER

Total precip. = 8.63 in

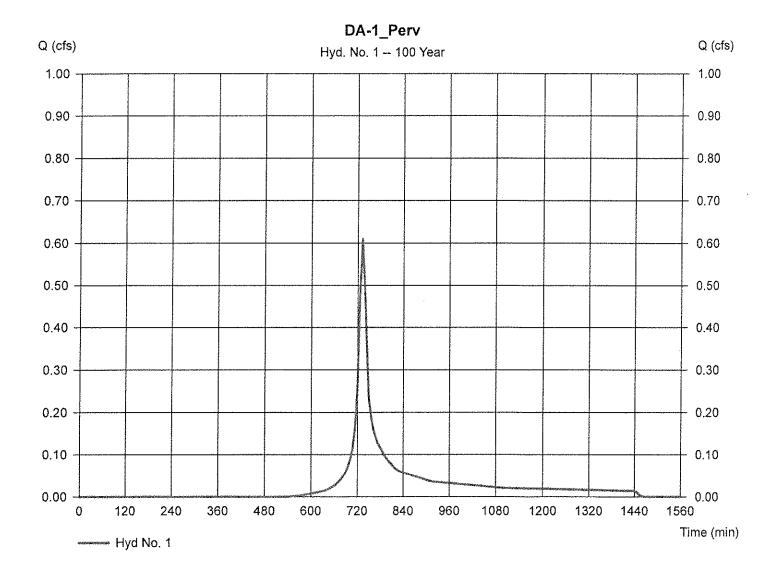
Storm duration = NOAA D cds.CDS

Peak discharge = 0.611 cfs Time to peak = 732 min Hyd. volume = 2,609 cuft

Curve number = 61 Hydraulic length = 0 ft

Time of conc. (Tc) = 10.00 min Distribution = Custom

Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 2

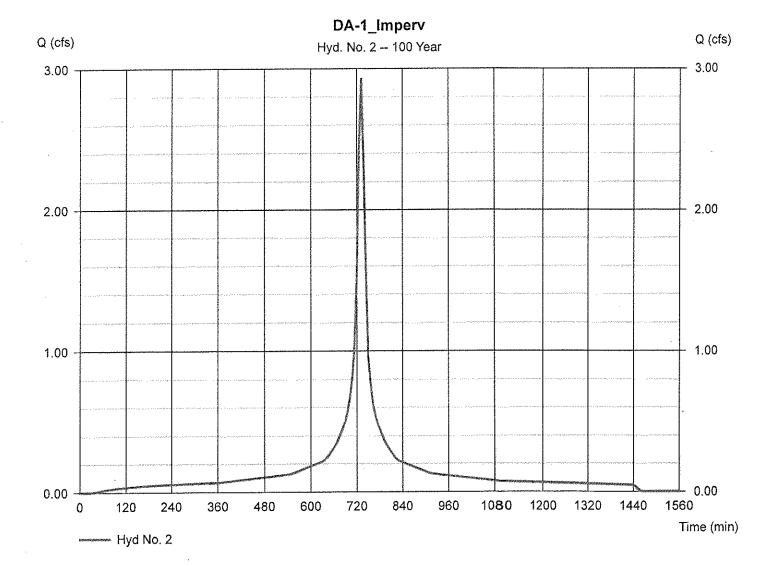
DA-1_Imperv

Hydrograph type = SCS Runoff
Storm frequency = 100 yrs
Time interval = 6 min
Drainage area = 0.510 ac
Basin Slope = 0.0 %
Tc method = USER

Total precip. = 8.63 in Storm duration = NOAA_D cds.CDS Peak discharge = 2.928 cfs
Time to peak = 732 min
Hyd. volume = 14,561 cuft

Curve number = 98 Hydraulic length = 0 ft Time of conc. (Tc) = 10.00 min

Distribution = Custom Shape factor = 484



Hydraflow Hydrographs by Intelisolve v9.23

Friday, Apr 1, 2022

Hyd. No. 3

DA1-Combine

Hydrograph type

= Combine

Storm frequency

= 100 yrs

Time interval Inflow hyds.

= 6 min = 1, 2 Peak discharge

= 3.538 cfs

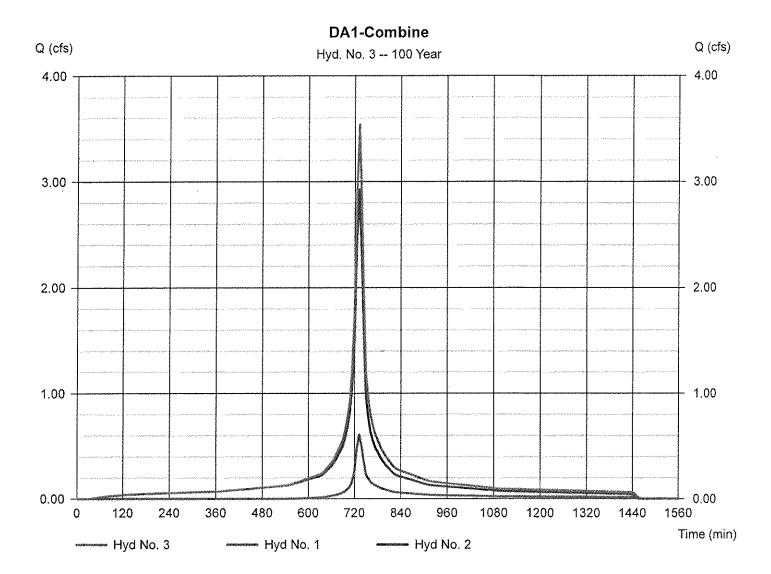
Time to peak

= 732 min

Hyd. volume

= 17,170 cuft

Contrib. drain. area = 0.705 ac



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